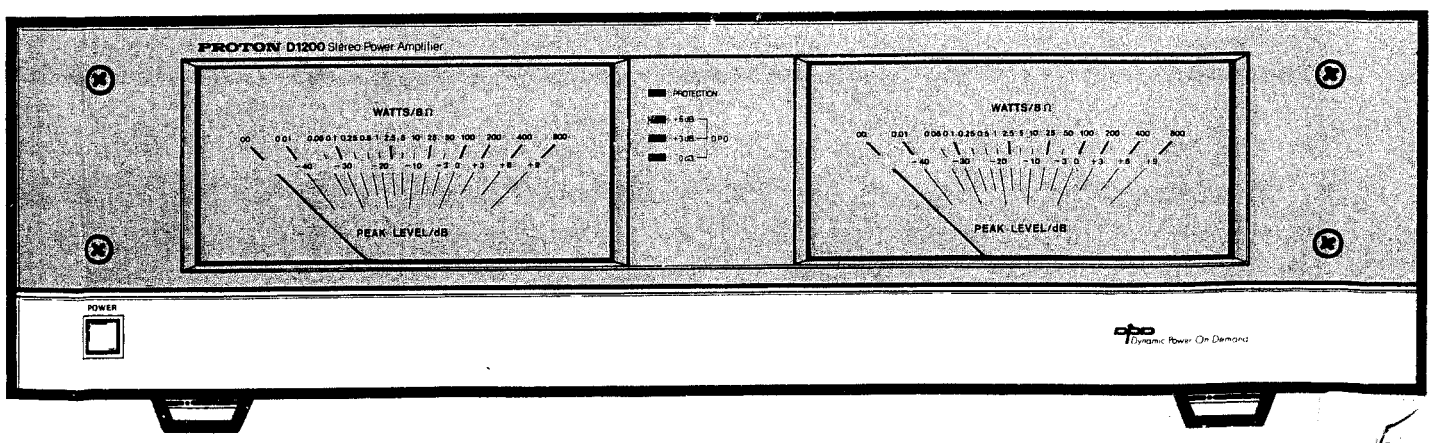
PROTON D1200 SERVICE MANUAL

STEREO POWER AMPLIFIER



CONTENTS

SPECIFICATION.....1
ALIGNMENT.....2
BLOCK DIAGRAM.....3
WIRING DIAGRAM.....4
CIRCUIT DIAGRAM.....5
PCB PARTS LOCATION (TOP VIEW).....6
PCB PARTS LOCATION (BOTTOM VIEW).....7
ELECTRICAL PARTS LIST.....8
ASSEMBLY DIAGRAM.....9
MECHANING.....11
PACKING DIAGRAM.....12

SPECIFICATION

Rated Power Output (20Hz-20kHz, 8 OHM):	100W, Per Channel
Dynamic Power at 8 OHM/4 OHM/2 OHM	
1) I.H.F. Standard 20ms Duration:	540W/1000W/1500W
2) 100ms Duration:	450W/650W/800W
3) 200ms Duration:	380W/500W/520W
(Duty Cycle: 500ms)	
Dynamic Headroom at 8 OHM/4 OHM/2 OHM:	7.3dB
T.H.D. at Rated Power:	0.02%
I.M.D. at Rated Power:	0.02%
Clipping Power at 8 OHM/4 OHM/2 OHM:	110W/175W/220W
Bridge Power at 8 OHM/4 OHM:	1800W/2700W
Damping Factor:	>150
Frequency Response 20-20kHz:	±0.2dB
Power Bandwidth at T.H.D. 0.1%:	10-40kHz
Input Resistance/Capactance:	15K OHM/220pF
Input Sensitivity:	1V
Channel Crosstalk (1kHz):	85dB
S/N Ratio (A-Weighted):	120dB
Dimensions W×H×D (inch):	16.5"×4.3"×14.2"
(cm):	42×11×36
Net Weight:	15Kg
Power Supply	
U.S. and Canadian Models:	120V/60Hz
European Model:	220V/50Hz
British and Australian Models:	240V/50Hz
Other Area Model (General Model):	115V,230V/50,60Hz

ALIGNMENT

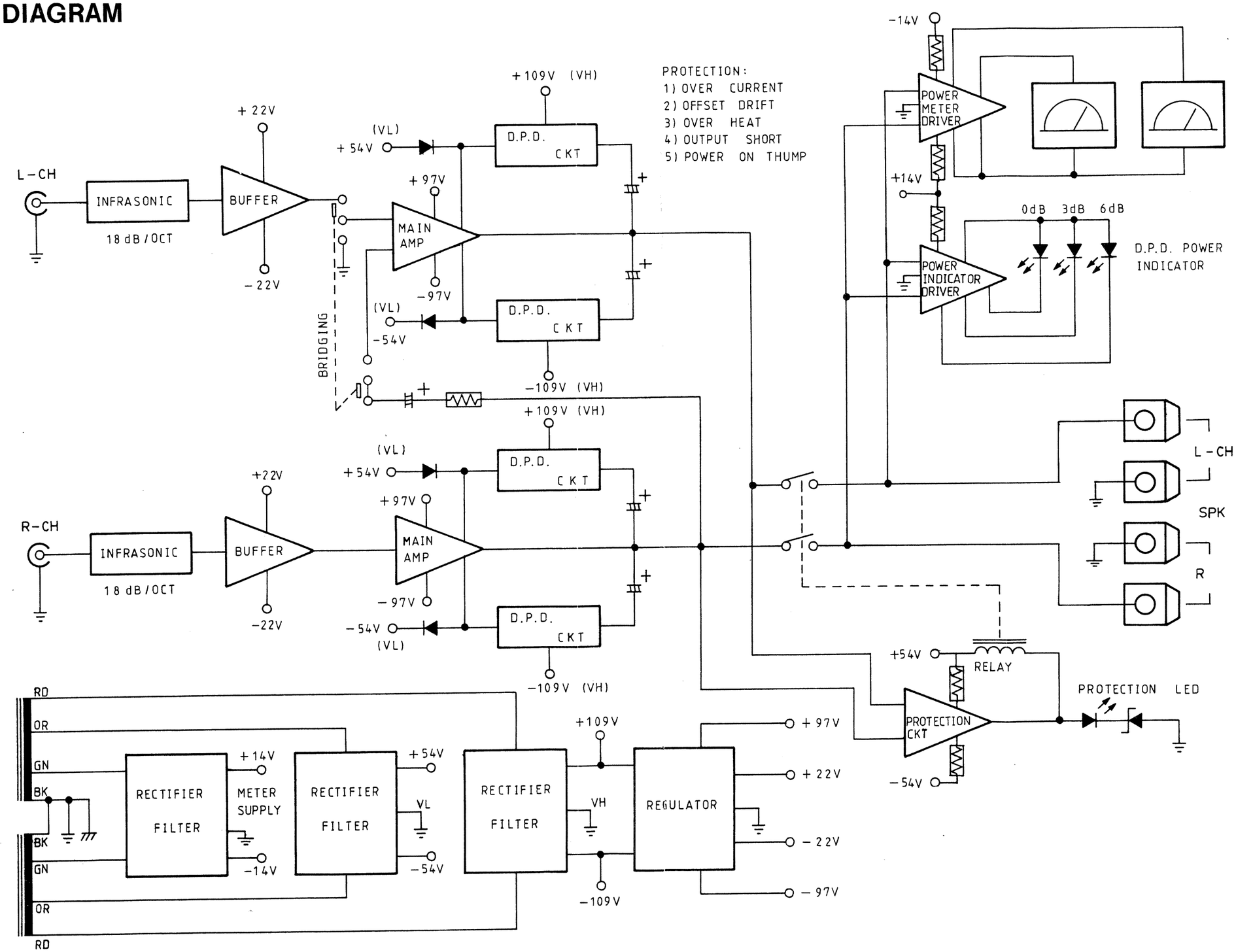
IDLE CURRENT ALIGNMENT

1. Turn VR603, VR604 to fully counter clockwise position.
2. Remove the load from speaker terminals.
3. Push on POWER for 5 minutes pre-heating.
4. Connect DC millivolt-meter across R651 for left channel R652 for right channel. The meter sensitivity should be set at 100mV full scale deflection.
5. Adjust VR603 (left channel) and VR604 (right channel) till the reading from meter is between 2.5mV and 5.0mV the alignment is completed.

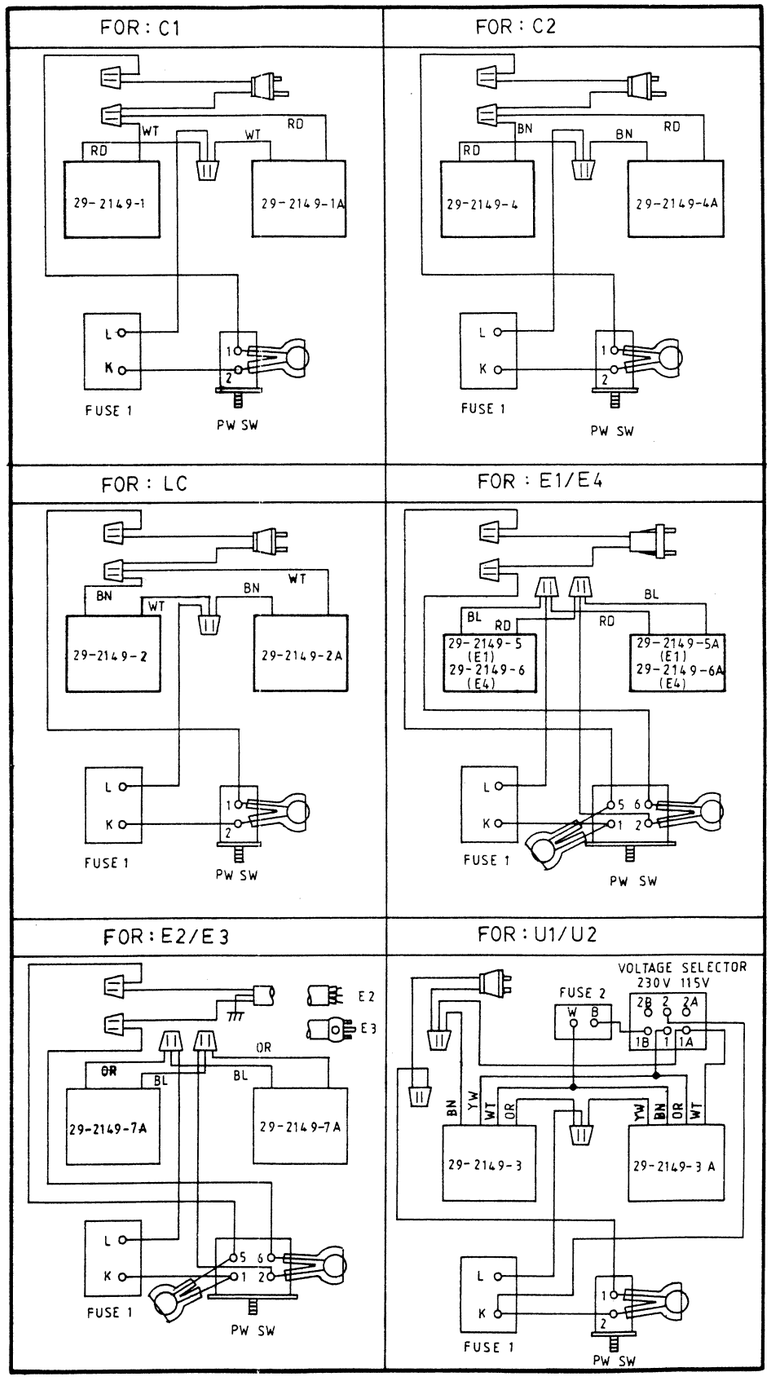
OFFSET ALIGNMENT

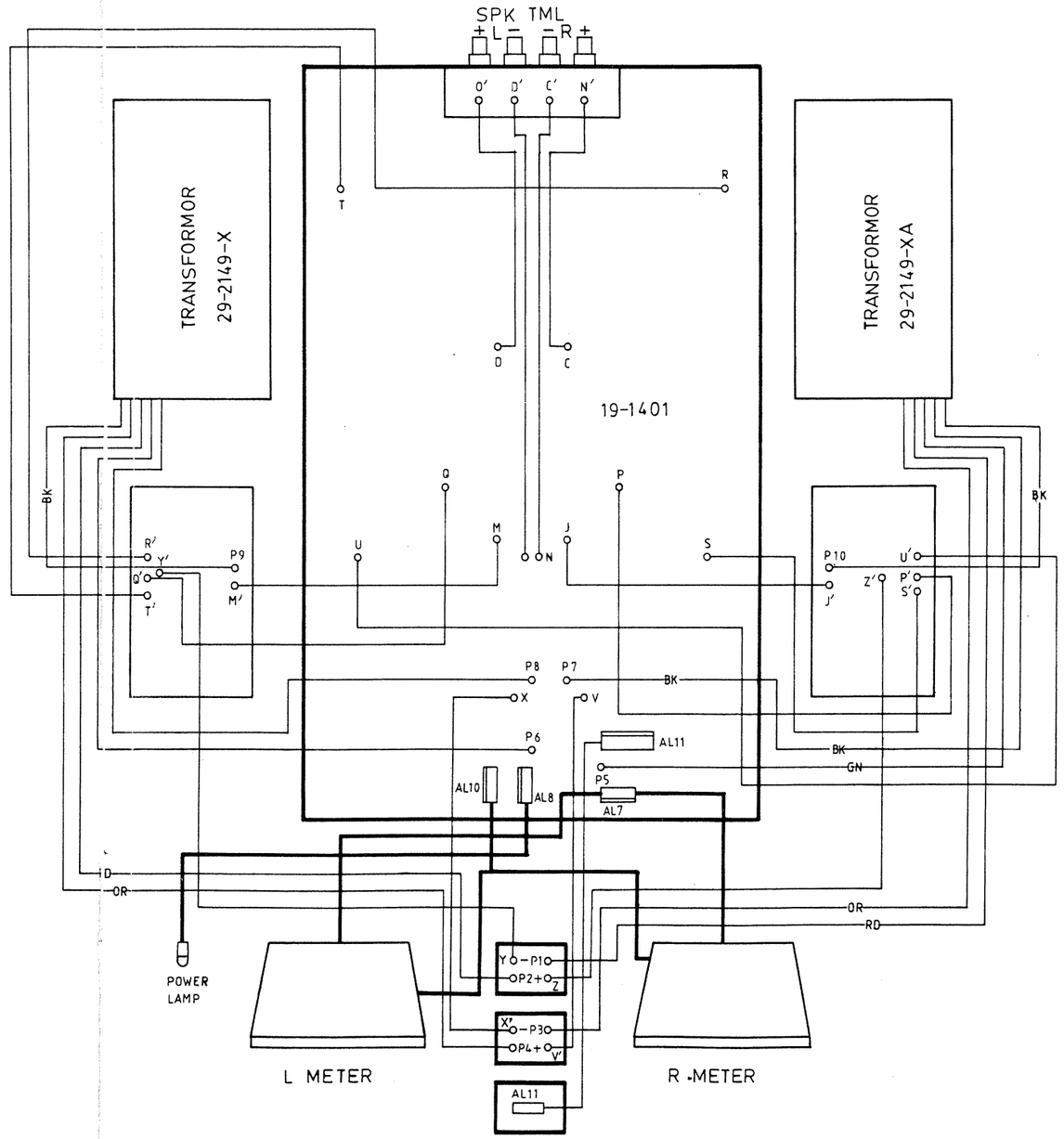
1. Remove the load from speaker terminals.
2. Push on POWER for 5 minntes pre-heating.
3. Connect a DC millvolt-meter to speaker terminals of each channel. The meter sensitivity should be set at 100mV full scale deflection. The positive input of the meter should be connected to the red (+) speaker terminal.
4. Adjust VR601 (left channel) and VR602 (right channel) till the meter reading is zero. The alignments is completed.

BLOCK DIAGRAM

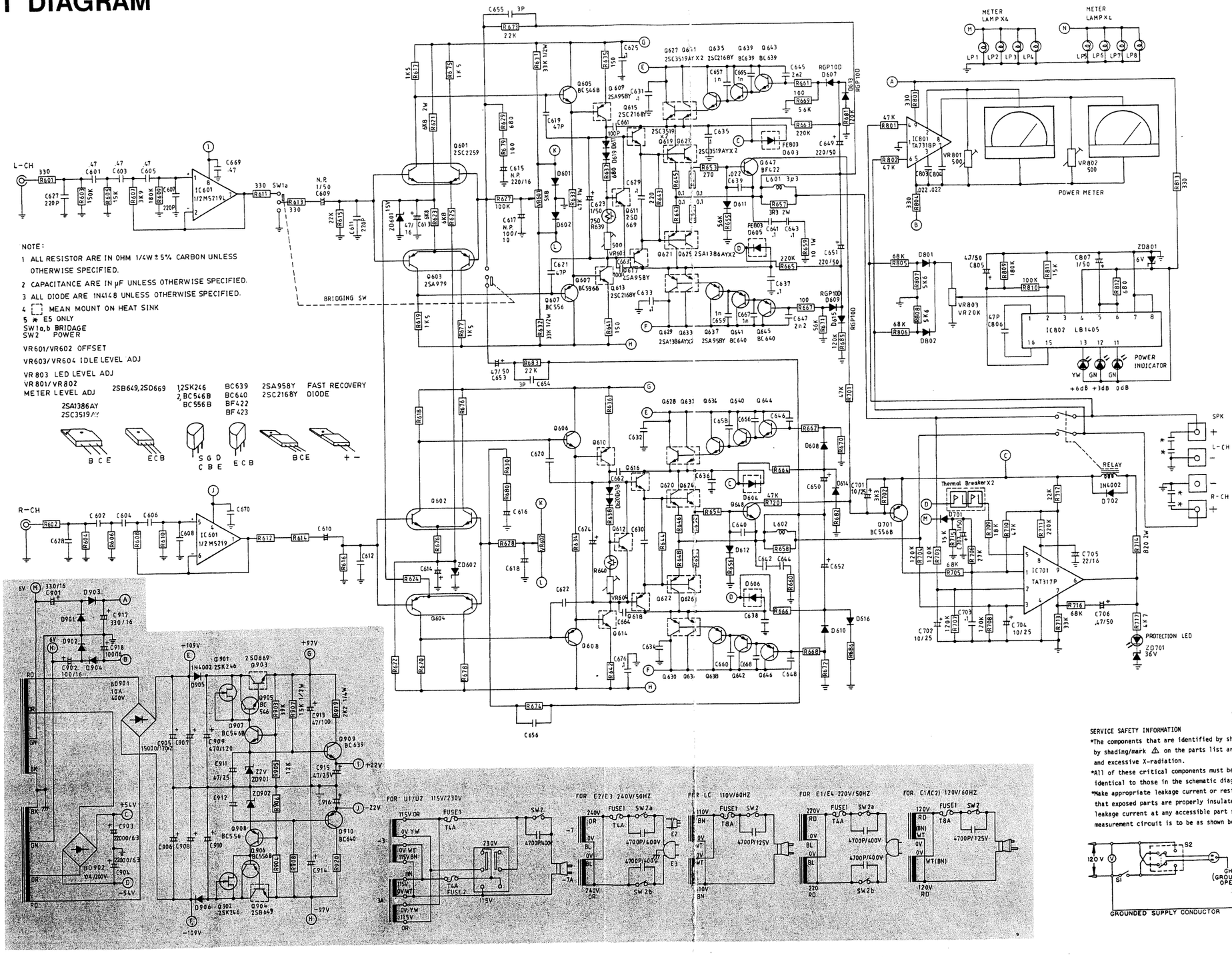


WIRING DIAGRAM

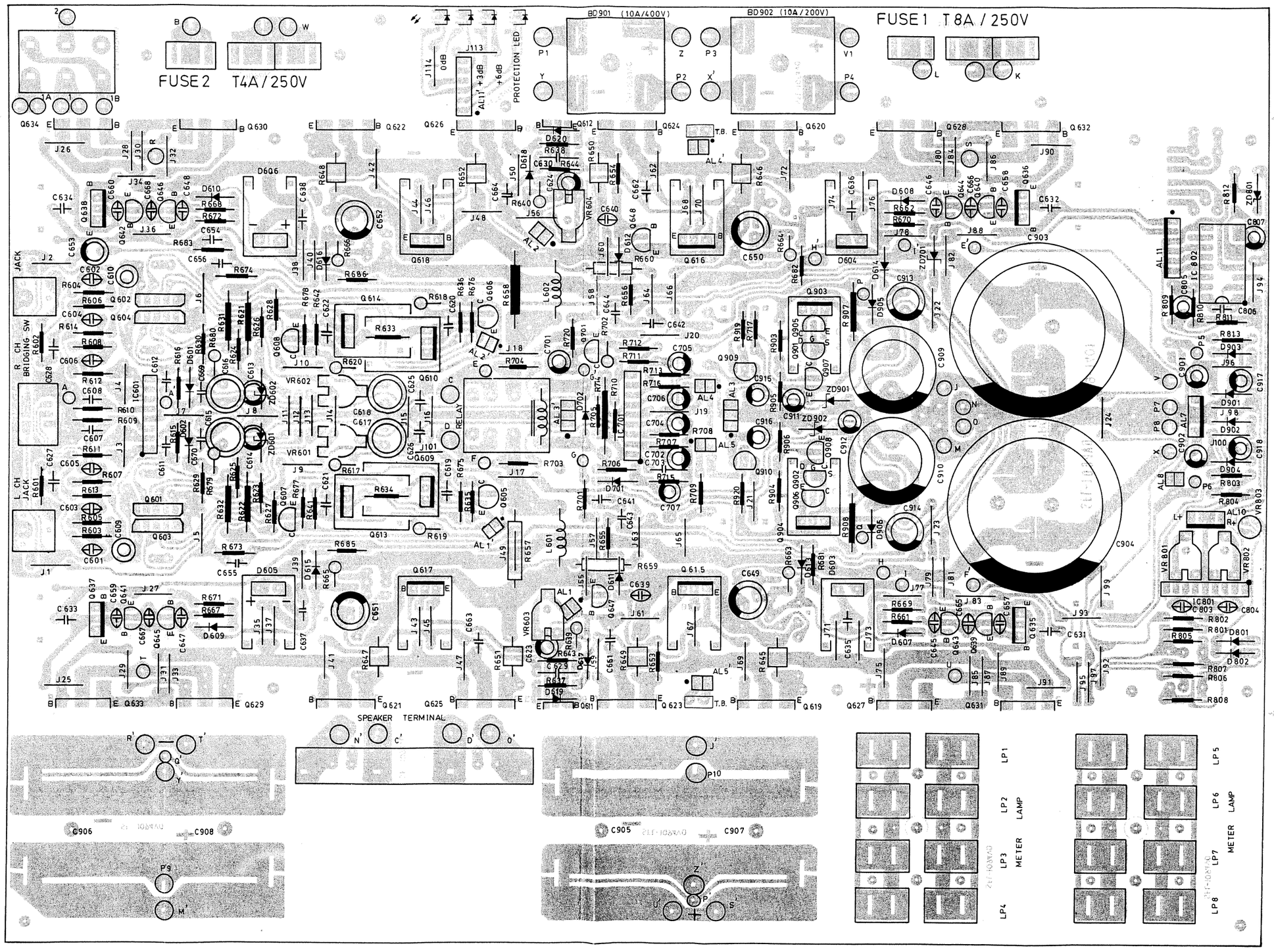




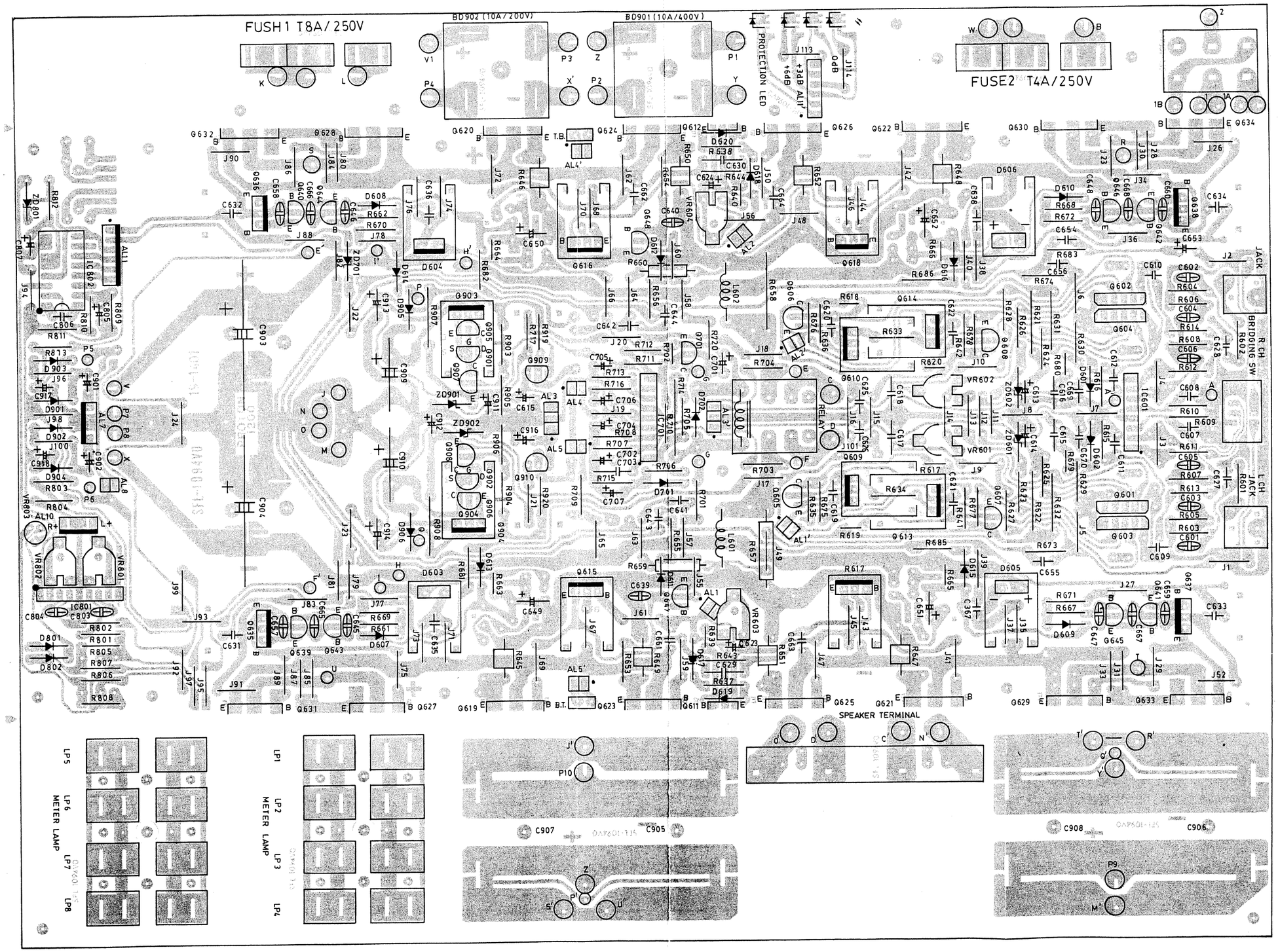
CIRCUIT DIAGRAM


NOTE:
1 ALL RESISTOR ARE IN OHM 1/4W ± 5% CARBON UNLESS OTHERWISE SPECIFIED.
2 CAPACITANCE ARE IN μF UNLESS OTHERWISE SPECIFIED.
3 ALL DIODE ARE 1N4148 UNLESS OTHERWISE SPECIFIED.
4 MEAN MOUNT ON HEAT SINK
5 * E5 ONLY
SW1a,b BRIDAGE
SW2 POWER
VR601/VR602 OFFSET
VR603/VR604 IDLE LEVEL ADJ
VR 803 LED LEVEL ADJ
VR 801/VR 802 METER LEVEL ADJ
2SB649,2SD669
1,2SK246
2,BC546B BC556B
BC639 BC640 BF422 BF423
2SA958Y 2SC2168Y
FAST RECOVERY DIODE
2SA1386AY 2SC3519AY
L-CH
R-CH
BRIDGING SW
METER LAMP X4
POWER METER
POWER INDICATOR
IC802 LB1405
IC801 TA7318P
IC701 TA7317P
RELAY
Thermal Breaker X2
PROTECTION LED
ZD701 36V
SPK
L-CH
R-CH
FOR U1/U2 115V/230V
FOR E2/E3 240V/50HZ
FOR UC 110V/60HZ
FOR E1/E4 220V/50HZ
FOR C1/C2) 120V/60HZ
SERVICE SAFETY INFORMATION
*The components that are identified by shading on the schematic diagram and by shading/mark ⚠ on the parts list are used to prevent shock, fire hazard and excessive X-radiation.
*All of these critical components must be replaced only with the same type identical to those in the schematic diagram and parts list.
*Make appropriate leakage current or resistance measurements to determine that exposed parts are properly insulated from the supply circuit, the leakage current at any accessible part shall be less than 0.5mA, and the measurement circuit is to be as shown below.
APPLIANCE
METER
INSULATING TABLE
GROUNDED SUPPLY CONDUCTOR
(GROUNDING OPEN)

PCB PARTS LOCATION (TOP VIEW)



PCB PARTS LOCATION (BOTTOM VIEW)



ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
RESISTORS (All are carbon film 1/4W +-5% unless noted otherwise)		
R601-R602	16-1/4CA331J	330 OHM
R603-R604	16-1/4CA154J	150K OHM
R605-R606	16-1/4CA153J	15K OHM
R607-R608	16-1/4CA392J	3K9 OHM
R609-R610	16-1/4CA184J	180K OHM
R611-R612	16-1/4CA331J	330 OHM
R613-R614	16-1/4CA331J	330 OHM
R615-R616	16-1/4CA223J	22K OHM
R617-R618	16-1/4CR152J	1K5 OHM
R619-R620	16-1/4CR152J	1K5 OHM
⚠ R621-R622	16-2AN682J	2W MO 6K8 OHM
R623-R624	16-1/4CA682J	6K8 OHM
R625-R626	16-1/4CA682J	6K8 OHM
R627-R628	16-1/4CA104J	100K OHM
R629-R630	16-1/4CA681J	680 OHM
R631-R632	16-1/2CN333J	1/2W CARBON 33K OHM
⚠ R633-R634	16-1A473J	1W MO 47K OHM
⚠ R635-R636	16-1/4AS151J	1/4W MO 150 OHM
R637-R638	16-1/4CA681J	680 OHM
R639-R640	16-1045	THERMAL SERSOR 750 OHM
⚠ R641-R642	16-1/4AS151J	1/4W MO 150 OHM
⚠ R643-R644	16-1/4AS221J	1/4W MO 220 OHM
R645-R646	16-1044	7W CM 0.1 OHM +-10%
R647-R648	16-1044	7W CM 0.1 OHM +-10%
R649-R650	16-1044	7W CM 0.1 OHM +-10%
R651-R652	16-1044	7W CM 0.1 OHM +-10%
R653-R654	16-1/4CA271J	270 OHM
R655-R656	16-1/4CA563J	56K OHM
⚠ R657-R658	16-2AN3R3J	2W MO 3.3 OHM
⚠ R659-R660	16-1AN100J	1W MO 10 OHM
⚠ R661-R662	16-1/4AS101J	1/4W MO 100 OHM
R663-R664	16-1/4CR224J	220K OHM
R665-R666	16-1/4CR224J	220K OHM
⚠ R667-R668	16-1/4AS101J	1/4W MO 100 OHM
R669-R670	16-1/4CA563J	56K OHM
R671-R672	16-1/4CA563J	56K OHM
R673-R674	16-1/4CA223J	22K OHM
R675-R676	16-1/4CA152J	1K5 OHM
R677-R678	16-1/4CA152J	1K5 OHM
R679-R680	16-1/4CA101J	100 OHM
R681-R682	16-1/4CA124J	120K OHM
R683	16-1/4CA223J	22K OHM
R685-R686	16-1/4CA124J	120K OHM
R701	16-1/4CA473J	47K OHM
R702	16-1/4CR332J	3K3 OHM
R703-R704	16-1/4CA124J	120K OHM
R705	16-1/4CA683J	68K OHM
R706	16-1/4CA273J	27K OHM
R707-R708	16-1/4CA124J	120K OHM
R709	16-1/4CA183J	18K OHM
R710	16-1/4CA473J	47K OHM
R711	16-1/4CA224J	220K OHM
R712	16-1/4CA223J	22K OHM
R713	16-1/4CA333J	33K OHM
⚠ R714	16-2AN821J	2W MO 820 OHM
R715	16-1/4CA153J	15K OHM
R716	16-1/4CA683J	68K OHM
R717	16-1/4CA472J	4K7 OHM
R720	16-1/4CA473J	47K OHM
R801-R802	16-1/4CA473J	47K OHM
R803-R804	16-1/4CA331J	330 OHM
R805-R806	16-1/4CA683J	68K OHM

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION
RESISTORS (All are carbon film 1.4W +-5% unless noted otherwise)		
R807-R808	16-1/4CA562J	5K6 OHM
R809	16-1/4CA184J	180K OHM
R810	16-1/4CA104J	100K OHM
R811	16-1/4CA153J	15K OHM
R812	16-1/4CA681J	680 OHM
R813	16-1/4CA331J	330 OHM
R903-R904	16-1/4CA393J	39K OHM
R905-R906	16-1/4CA123J	12K OHM
R907-R908	16-1/2CN153J	1/2W CARBON 15K OHM
R919-R920	16-1/4CA222J	2K2 OHM
CAPACITORS		
C601-C602	17-5HF474J	METALIZED 0.47uF 50V +-5%
C603-C604	17-5HF474J	METALIZED 0.47uF 50V +-5%
C605-C606	17-5HF474J	METALIZED 0.47uF 50V +-5%
C607-C608	17-5DR221M	CERAMIC 220pF 50V +-20%
C609-C610	17-5SF105M	ELEC BP 1uF 50V +-20%
C611-C612	17-5DR221M	CERAMIC 220pF 50V +-20%
C613-C614	17-1.6ER476M	ELEC 47uF 16V +-20%
C615-C616	17-1.6SF227Y	ELEC BP 220uF 16V +50-10%
C617-C618	17-1SF107Y	ELEC BP 100uF 10V +50-10%
C619-C620	17-5ODR470JSL	CERAMIC 47pF 500V +-5%
C621-C622	17-5ODR470JSL	CERAMIC 47pF 500V +-5%
C623-C624	17-5ER105M	ELEC 1uF 50V +-20%
C625-C626	17-10DF104M	CERAMIC 0.1uF 100V +-20%
C627-C628	17-5DR221M	CERAMIC 220pF 50V +-20%
C629-C630	17-5DH104Z	CERAMIC 0.1uF 50V +80-20%
C631-C632	17-10DF104M	CERAMIC 0.1uF 100V +-20%
C633-C638	17-10DF104M	CERAMIC 0.1uF 100V +-20%
C639-C640	17-5FR223J	MYLAR 0.022uF 50V +-5%
C641-C644	17-10DF104M	CERAMIC 0.1uF 100V +-20%
C645-C648	17-5FR222J	MYLAR 0.0022uF 50V +-5%
C649-C652	17-5EF227M	ELEC 220uF 50V +-20%
C653	17-5ER476M	ELEC 47uF 50V +-20%
C654-C656	17-5DR3ROCPH	CERAMIC 3pF 50V +-0.25pF
C657-C660	17-5FR102J	MYLAR 0.001uF 50V +-5%
C661-C664	17-5DR101M	CERAMIC 100pF 50V +-20%
C665-C668	17-5FR102J	MYLAR 0.001uF 50V +-5%
C669-C670	17-5DR473Z	CERAMIC 0.47uF 50V +80-20%
C701	17-5ER106M	ELEC 10uF 50V +-20%
C702	17-2.5ER106M	ELEC 10uF 25V +-20%
C703	17-5DH104Z	CERAMIC 0.1uF 50V +80-20%
C704	17-2.5ER106M	ELEC 10uF 25V +-20%
C705	17-1.6ER226M	ELEC 22uF 16V +-20%
C706	17-5ER474M	ELEC 0.47uF 50V +-20%
C707	17-5ER105M	ELEC 1uF 50V +-20%
C803-C804	17-5FR223J	MYLAR 0.022uF 50V +-5%
C805	17-5ER475M	ELEC 4.7uF 50V +-20%
C806	17-5DR470M	CERAMIC 47pF 50V +-20%
C807	17-5ER105M	ELEC 1uF 50V +-20%
C901	17-1.6EF337M	ELEC 330uF 16V +-20%
C902	17-1.6EF107M	ELEC 100uF 16V +-20%
C903-C904	17-6.3P229Y	ELEC 22000uF 63V +50-10%
C905-C908	17-12P159Y	ELEC 15000uF 120V +50-10%
C909-C910	17-12EG477Y	ELEC 470uF 120V +50-10%
C911-C912	17-2.5ER476M	ELEC 47uF 25V +-20%
C913-C914	17-10EF476Y	ELEC 47uF 100V +50-10%
C915-C916	17-2.5ER476M	ELEC 47uF 25V +-20%
DIODE		
ZD601-ZD602	30-1044-1	ZENER 15V HZ15-2
D601-D602	30-1152TA	1N4148
⚠ D603-D604	30-1319	FE8D

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

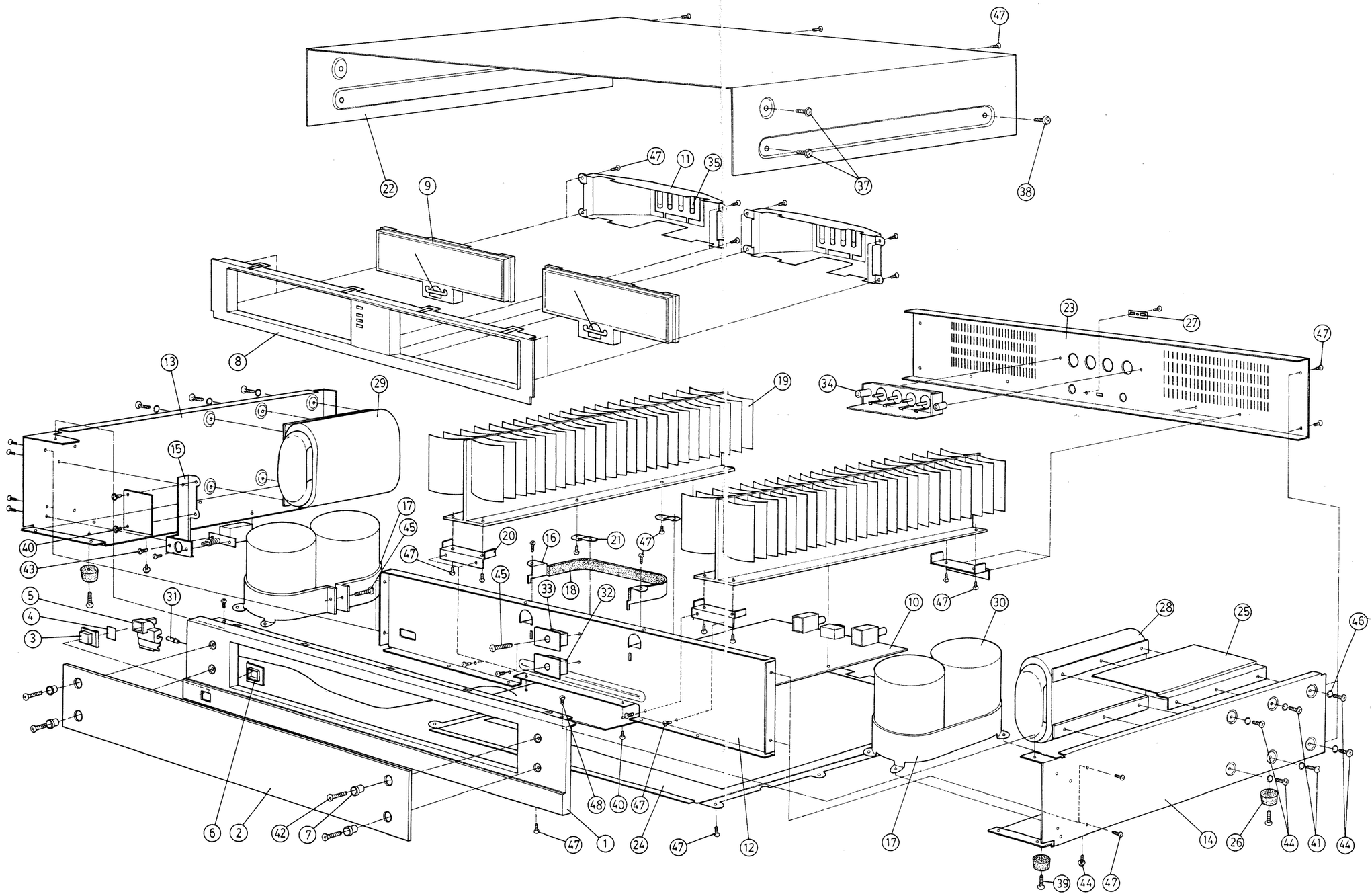
REF. NO.	PART NO.	DESCRIPTION
DIODE		
⚠ D605-D606	30-1319	FE8D
⚠ D607-D608	30-1268	RGP10D
⚠ D609-D610	30-1268	RGP10D
D611-D612	30-1152TA	1N4148
⚠ D613-D614	30-1268	RGP10D
⚠ D615-D616	30-1268	RGP10D
⚠ D617-D620	30-1152TA	1N4148
D701	30-1152TA	1N4148
⚠ D702	30-1002	1N4002
ZD701	30-1224-1	ZENER HZ36-2
PROTECTION	30-1075	LED RED LT3211 R/X-253FPR
PW 0dB	30-1085	LED GN LT3231 G/X-253FG
PW 3dB	30-1085	LED GN LT3231 G/X-253FG
PW 6dB	30-1076	LED YW LT3251 Y/X-253FY
D901-D904	30-1152TA	1N4148
D905-D906	30-1002	1N4002
BD901	30-1318	BRIDGE KBPC10-02
BD902	30-1317	BRIDGE KBPC10-04
ZD901-ZD902	30-1041	ZENER 22V RD22EB3
TRANSISTOR		
Q601-Q602	30-2404	2SC2259
Q603-Q604	30-2405	2SA979
Q605-Q606	30-2090-2	BCS46B
Q607-Q608	30-2096	BC556B
Q609-Q610	30-2390	2SA958
Q611-Q612	30-2260	2SD669
Q613-Q614	30-2391	2SC2168
Q615-Q616	30-2391	2SC2168
Q617-Q618	30-2390	2SA958
Q619-Q620	30-2399-1	2SC3519A
Q621-Q622	30-2398-1	2SA1386A
Q623-Q624	30-2399-1	2SC3519A
Q625-Q626	30-2398-1	2SA1386A
Q627-Q628	30-2399-1	2SC3519A
Q629-Q630	30-2398-1	2SA1386A
Q631-Q632	30-2399-1	2SC3519A
Q633-Q634	30-2398-1	2SA1386A
Q635-Q636	30-2391	2SC2168
Q637-Q638	30-2390	2SA958
Q639-Q640	30-2353	BC639
Q641-Q642	30-2354	BC640
Q643-Q644	30-2353	BC639
Q645-Q646	30-2354	BC640
Q647-Q648	30-2237	BF422
Q701	30-2096	BC556B
Q901-Q902	30-2367	FET 2SK246
Q903	30-2260	2SD669
Q904	30-2259	2SB649
Q905	30-2090-2	BC546B
Q906	30-2096	BC556B
Q907	30-2090-2	BC546B
Q908	30-2096	BC556B
Q909	30-2353	BC639
Q910	30-2354	BC640
IC		
IC601	30-3247	DUAL OP M5219L
IC701	30-3187	PROTECTION TA7317P
IC802	30-3404	TA7318
IC803	30-3038	LB1405
MISCELLANEOUS		
VR601-VR602	VR01-F08502B	SEMI-FIX 8¢ 5KB FLAT

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION
MISCELLANEOUS		
VR603-VR604	VR03-F08501B	SEMI-FIX 8¢ 500B FLAT
VR802-VR803	VR03-F08501B	SEMI-FIX 8¢ 500B FLAT
VR806	VR06-F06223B	SEMI-FIX 6¢ 22KB FLAT
L601-L602	29-1147	COIL AIR , 3.3uH
SW1	31-1226	SW SLIDE SSP22FL080
METER LAMP	31-2044	LAMP 6.3V 150mA
PW LAMP	31-2043	LAMP 6V 300mA
RELAY	35-3053	RELAY DC 24V
PW SW	31-1366	PW SW UL CSA TV-8
PW SW	31-1292	PW SW ESB-90702V
	12-2201	RCA JACK 1P WHITE
	12-2202	RCA JACK 1P RED
	12-2207	SPEAKER TERMINAL
	16-2002	THERMAL PROTECTOR T110AR1.1
	14-5061	POWER CORD SPT-2 UL/CSA
	14-5062	POWER CORD SPT-2 UL/CSA
	14-5060	POWER CORD 2x0.75 SQMM PLUG DNSF
	14-5013	POWER CORD 3x0.75 SQMM SAA PLUG
	14-5025	POWER CORD 3x0.75 SQMM UK
	32-18001W	FUSE 6.3x32mm SLOW BLOW 8A UL
	32-14001S	FUSE 5x20mm SEMKO SLOW 4A
	29-2149-1	XFMR R-150 120V CSA
	29-2149-2	XFMR R-150 110V LC
	29-2149-3	XFMR R-150 115V/230V MULTI-V
	29-2149-4	XFMR R-150 120V UL
	29-2149-5	XFMR R-150 220V DNSF
	29-2149-6	XFMR R-150 220V
	29-2149-7	XFMR R-150 240V
	19-1401	PCB MAIN

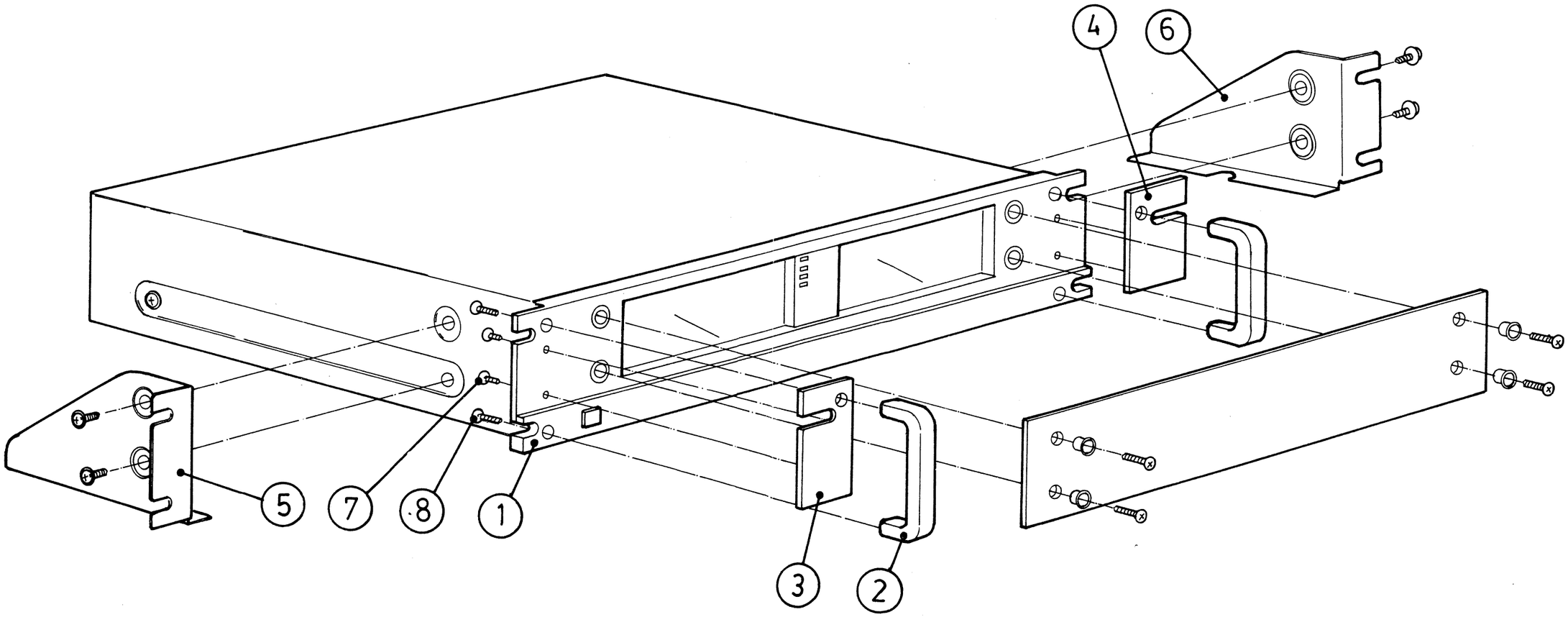
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

ASSEMBLY DIAGRAM



ASSEMBLY DIAGRAM

ITEM	DESCRIPTION	PART NO.	Q'TY
1	FRONT PANEL	11-8380-1	1
2	HANDLE	12-6012	2
3	HANDLE BASE L.	12-6013	1
4	HANDLE BASE R.	12-6014	1
5	HANDLE BKT. L.	11-2408	1
6	HANDLE BKT. R.	11-2409	1
7	FLAT HEAD MACHINE SCREW	S1E03+I07SL-2	4
8	FLAT HEAD MACHINE SCREW	S1E05+I15SL-2	4



MECHANICAL PARTS LIST

ITEM	DESCRIPTION	PART NO.	Q'TY
1	FRONT PANEL	11-8380	1
2	SMOKED GLASS	11-9160	1
3	PUSH KNOB	12-3193	1
4	SHIELD	11-9161	1
5	POWER SWITCH CONNECTOR	12-7044	1
6	BUSHING A	12-7042	1
7	BASE FOR GLASS	15-2T01	4
8	AUX. PANEL	11-8384	1
9	METER SIGNAL	35-1030	2
10	MAIN PCB	19-1401	1
11	LIGHT COLLECTOR	11-9162	2
12	FRONT CHASSIS	11-6209	1
13	AUX. CHASSIS L	11-6208	1
14	AUX. CHASSIS R	11-6210	1
15	POWER SWITCH HOLDER	11-3127	1
16	CAP HOLDER B	11-3119	1
17	CAP HOLDER A	11-3118	2
18	CAP RETAINER	28-2139	1
19	HEAT SINK	11-5086	2
20	SINK HOLDER	11-3120	4
21	P.C.B. HOLDER	11-3121	4
22	CABINET	50-1055	1
23	BACK PANEL	11-8393-1	1
24	BOTTOM CHASSIS	11-6211	1
25	X'FORMER SHIELD	11-9167	1
26	RUBBER STAND	28-1029	4
27	STOPPER SWITCH B	11-9107	1
28	X'FORMER	29-2149-XA	1
29	X'FORMER	29-2149-X	1
30	CAPACITOR	17-12P159Y	2
31	LAMP	31-2044	1
32	DIODE	30-1317	1
33	DIODE	30-1318	1
34	SPK TML	12-2007	1
35	LAMP	31-2043	8
36	POWER SWITCH	31-1366(31-1292)	1
37	SPECIAL SCREW	15-2051	4
38	SPECIAL SCREW	15-2069	2
39	SPECIAL SCREW	15-2063	4
40	SPECIAL SCREW	15-2075	10
41	MACHINE SCREW	S1D04+I06SL-2	4
42	MACHINE SCREW	S1E04+I18SL-2	4
43	MACHINE SCREW	S1D03+I06SL-2	6
44	MACHINE SCREW	S1D04+I10SL-2	8
45	MACHINE SCREW	S1D04+I16SL-2	4
46	SPRING WASHER	A04G07SL01	12
47	TAPPING SCREW	S2D03+I08SL-2	70
48	MACHINE SCREW	S1E03+I06SL-2	2

PACKING DIAGRAM

ITEM	DESCRIPTION	PART NO.	Q'TY
1	INNER CARTON	CT-5278	1
2	POLYLONE	34-1054	2
3	WARRANTY CARD	21-3046	1
4	OWNER'S MANUAL	21-4139	1
		(21-4140 CHINESE)